

## Claims

1.-39. (cancelled)

40. (new) A method for determining signal degradations for an optical signal transmitted in a transmission system, the method comprising:

feeding at least a fraction of the optical signal to an adaptive optical filter at a measurement point in the transmission system; and

measuring the fraction related to one or more quality parameters, wherein

a first measurement of the quality parameter is made with the adaptive optical filter being set to pass all signals or being by-passed, and wherein

further measurements are made related to the quality parameter with the adaptive optical filter having predefined pass characteristics, each influencing specific signal distortions.

41. (new) The method in accordance with Claim 40, wherein the pass characteristics of the adaptive optical filter by which one or more signal distortions are influenced or compensated, as applicable, are reset before, between or after the measurements which are made.

42. (new) The method in accordance with Claim 40, wherein in the case of a broadband optical multiplex signal, a spectrally-adjustable fraction of the optical multiplex signal is fed to the adaptive optical filter.

43. (new) The method in accordance with Claim 40, wherein at least one quality parameter is measured for a statement about the residual dispersion and about other signal distortions in

the filtered signal, and from this compensation is effected by an adjustment of the adaptive optical filter.

44. (new) The method in accordance with Claim 40, wherein the quality parameter(s) are effected by a measurement on eye-diagrams, amplitude histograms, Q measurements or by a measurement of errors in the signal, supplied from the adaptive optical filter and then opto-electrically converted, which have been corrected by FEC or EFEC.

45. (new) The method in accordance with Claim 40, wherein one or more quality parameters are measured for a statement about noise-like interference in the filtered signal.

46. (new) The method in accordance with Claim 40, wherein one or more quality parameters provide statements about polarization effects.

47. (new) The method in accordance with Claim 40, wherein for the adaptive optical filter, use is made of a single- or multi-stage FIR or an IIR filter for which the amplitude or phase response of the optical signal can be regulated.

48. (new) The method in accordance with Claim 40, wherein the pass characteristics of the adaptive optical filter are regulated on the basis of an analysis of one or more of the quality parameters which have been determined.

49. (new) The method in accordance with Claim 40, wherein the pass characteristics of the adaptive optical filter are determined from computer simulations.

50. (new) The method in accordance with Claim 40, wherein by using a predefined variation in the pass characteristics of the

adaptive optical filter, an analysis is carried out of the signal quality, in relation to various effects which can influence the signal.

51. (new) The method in accordance with Claim 40, wherein by using a predefined variation in the pass characteristics of the adaptive optical filter, the various effects which can influence the signal are separated out.

52. (new) The method in accordance with Claim 40, wherein the signal is optimized in relation to one or more quality parameters by means of suitable adjustment parameters of the adaptive optical filter, and from these adjustment parameters conclusions are drawn about the signal degradations.

53. (new) The method in accordance with Claim 40, wherein a table, for use in registering the effects which can influence the signal against the corresponding settings of the pass characteristics of the adaptive optical filter, is created when the pass characteristics are reset.

54. (new) The method in accordance with Claim 40, wherein when a change is detected in the signal quality, a corresponding table is updated.

55. (new) The method in accordance with Claim 40, wherein the main effects or groups of effects anticipated as having an influence on the signal are dispersion, distortions, noise-like effects and polarization effects.

56. (new) The method in accordance with Claim 40, wherein several interconnected adaptive optical filters are used.

57. (new) An arrangement for determining signal degradations in

an optical broadband signal transmitted via a transmission system, the arrangement comprising:

a coupler and an adaptive optical filter, wherein at least a spectral and/or amplitude fraction is tapped off from the signal by the coupler and fed to the adaptive optical filter; and

a measurement unit and a determination unit for determining one or more quality parameters, wherein the measurement unit and the determination unit are arranged downstream of the adaptive optical filter, wherein

the adaptive optical filter has a control unit is configured such that in a first operating state the through-switching of the optical signal is effected and in a second operating state it is possible to set predefined pass characteristics for the adaptive optical filter, to exercise an influence on signal distortions in the optical signal.

58. (new) The arrangement in accordance with Claim 57, wherein a bandpass filter is connected downstream from the coupler.

59. (new) The arrangement in accordance with Claim 58, wherein connected downstream from the bandpass filter is an amplifier, with a further bandpass filter connected downstream from it.

60. (new) The arrangement in accordance with Claim 59, wherein an amplifier is connected between the coupler and the bandpass filter.

61. (new) The arrangement in accordance with Claim 57, wherein a bidirectional communication facility is interposed between the determination unit and the control unit.

62. (new) The arrangement in accordance with Claim 57, wherein a module for analyzing and separating signal degradations is

connected to the determination unit.

63. (new) The arrangement in accordance with Claim 57, wherein an opto-electrical converter is arranged upstream of the measurement unit.

64. (new) The arrangement in accordance with Claim 57, wherein the adaptive optical filter has a module for influencing the phase and/or amplitude response of the optical signal, and which is controlled by the control unit.

65. (new) The arrangement in accordance with Claim 57, wherein the optical signal is a multiplex signal with several optical channels, and the bandpass filters are adjustable channel selection filters.